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BUREAU OF PLANT INDUSTRY

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XVI June 1, 1932 Number 8

## FOREWORD

The accompanying list of known host plants for the stem and bulb nematode will be of real service to plant pathologists. Interest in diseases caused by nematodes is rapidly increasing among American students of plant diseases and the Plant Disease Survey considers it a privilege to be able to place the present list in their hands.

The work of compilation has been very great and continual revision will, of course, be necessary.

Plant pathologists will be interested to know that Dr. Steiner contemplates the preparation of a more elaborate list with notes on the symptoms caused by some of the various hosts infected by Tylenchus dipsaci.

(Neil E. Stevens)

## A LIST OF PLANTS ATTACKED BY TYLENCHUS DIPSACI, THE BULB OR STEM NEMA

Compiled by

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The following list is written primarily for the use of the nurseryman, farmer, and quarantine inspector. Each host plant is listed alphabetically under its accepted scientific name (numbered, and in capital letters), under its synonym if such is found in nematological or plant pathological literature (in small letters and parentheses), and under its common names if such are in general use (in small letters without parentheses).

Standardized Plant Names, of the American Joint Committee on Horticultural Nomenclature, by Olmsted, Coville, and Kelsey, was used as a nomenclatorial basis as far as possible. Dr. Sidney F. Blake of the Division of Botany kindly made an additional check of the list.

Hosts known to be affected with the Tylenchus dipsaci in continental U. S. A. are marked * ; those observed, from whatever source, by members of the Division of Nematology are marked + . The marks occur after the accepted scientific names only.

1. AGROPYRON REPENS (=Triticum repens), Quackgrass, Quickgrass or Quitchgrass
   Alfalfa, MEDICAGO SATIVA
2. ALLIUM ASCALONICUM, Shallot
3. ALLIUM CEPA (=A. proliferum), Onion *+
4. ALLIUM PORRUM, Common leek
   (Allium proliferum) = A. CEPA, Onion ("kroonui" of Ritzema-Bos)
5. ALLIUM SATIVUM, Common garlic *+
6. ALLIUM SCHOENOPRASUM, Chive +
7. ALLIUM TRIQUETRUM
8. ALLIUM VINEALE, Wild or field garlic
9. ALOPECURUS GENICULATUS, Floating foxtail grass
10. ALSINE MEDIA (=Stellaria media), Common chickweed
    (Amaryllis formosissima) = SPREKELIA FORMOSISSIMA, St. Jameslily
    Amazonlily, EUCHARIS SP.
11. AMSINCKIA INTERMEDIA *+
12. ANAGALLIS ARVENSIS, Scarlet pimpernel
    Anemone, Japanese, ANEMONE JAPONICA
13. ANEMONE JAPONICA, Japanese anemone
14. ANTHOXANTHUM ODORATUM, Sweet vernal grass
15. ARABIDOPSIS THALIANA (=Stenophragma thalianum), Mouse-ear cress
16. ARABIS ALPINA, Alpine rockcress
    Aucuba, Japanese, AUCUBA JAPONICA
17. AUCUBA JAPONICA, Japanese aucuba
18. AVENA FATUA +
19. AVENA NUDA +
20. AVENA SATIVA, Oats *+
21. AVENA STERILIS, Animated oats +
    Bachelor's button, CENTAUREA CYANUS
    Balmony, CHELONE GLABRA
    (Barkhausia taraxacifolia) = CREPIS VESICARIA TARAXACIFOLIA, Hawk's beard
    Barley, HORDEUM VULGARE
    Bean, common, PHASEOLUS VULGARIS
    Beet, common, BETA VULGARIS
    Bellflower, peachleaf, CAMPANULA PERSICIFOLIA
22. BELLIS PERENNIS, English daisy
23. BETA VULGARIS, Common beet

Bindweed, black, POLYGONUM CONVOLVULUS
Bindweed, field, CONVOLVULUS ARVENSIS
Bluebottle, CENTAUREA CYANUS
Bluegrass, POA ANNUA
24. BRASSICA ALBA (=Sinapis alba), White mustard
25. BRASSICA ARVENSIS (=Sinapis arvensis), Charlock
26. BRASSICA NAPUS, Rape
27. BRASSICA NIGRA, Black mustard
28. BRASSICA OLERACEA ACEPHALA, Kale
29. BRASSICA OLERACEA BOTRYTIS, Cauliflower
30. BRASSICA OLERACEA CAPITATA, Cabbage (white & red var.)
31. BRASSICA OLERACEA GEMMIFERA, Brussels sprouts
32. BRASSICA OLERACEA GONGYLODES (=B. rapifera), Kohlrabi
33. BRASSICA OLERACEA SABAUDA, Savoy cabbage
34. BRASSICA RAPA, Turnip
(Brassica rapifera) = B. OLERACEA GONGYLODES, Kohlrabi
Broadbean, VICIA FABA
35. BROMUS UNIOLOIDES, Rescue grass +
Brussels sprouts, BRASSICA OLERACEA GEMMIFERA
Buckwheat, common, FAGOPYRUM VULGARE
36. BURSA BURSA-PASTORIS (=Capsella bursa-pastoris; = Thlaspi bursa-pastoris), Shepherds-purse
Buttercup, creeping, RANUNCULUS REPENS
Buttercup, tall, RANUNCULUS ACRIS
Butterflyflower, orange-rose, SCHIZANTHUS RETUSUS
Butterflyflower, Wiseton, SCHIZANTHUS WISETONENSIS
Cabbage, savoy, BRASSICA OLERACEA SABAUDA
Cabbage, white & red var., BRASSICA OLERACEA CAPITATA
37. CALATHEA LINDGERGII
38. CAMELINA SATIVA, False flax
39. CAMPANULA PERSICIFOLIA, Peachleaf bellflower
40. CANNABIS SATIVA (?), Common hemp
(Capsella bursa-pastoris) = BURSA BURSA-PASTORIS, Shepherds-purse
41. CARDAMINE PRATENSIS, Cuckooflower
Cardoon, CYNARA CARDUNCULUS
42. CARDUUS ACANTHOIDES, Plumeless thistle
43. CAREX SP., Sedge
44. CARLINA VULGARIS, Thistle
Carnation, DIANTHUS CARYOPHYLLUS
Carrot, common, DAUCUS CAROTA
Cassava, MANIHOT ESCULENTA
Cats-ear, HYPOCHAERIS RADICATA
Cauliflower, BRASSICA OLERACEA BOTRYTIS
45. CENTAUREA CYANUS, Bachelor's button, Bluebottle, or Cornflower
46. CENTAUREA JACEA
47. CHAETOCHLOA SP. (=Setaria sp.)

Charlock, BRASSICA ARVENSIS
48. CHEIRANTHUS ALLIONI var. MOONLIGHT
49. CHEIRANTHUS CHEIRI, Common wallflower
(Chelone barbata) = PENTSTEMON BARBATUS
50. CHELONE GLABRA, White turtlehead or Balmony
51. CHENOPODIUM ALBUM, Lambs-quarters or Pigweed
Chickweed, common, ALSINE MEDIA
Chicory, CICHORIUM INTYBUS SATIVUM
Chive, ALLIUM SCHOENOPRASUM
52. CICHORIUM INTYBUS SATIVUM, Chicory
53. CIRSIUM ARVENSE, Canada thistle
(Cirsium bulbosum) = CIRSIUM TUBEROSUM
54. CIRSIUM LANCEOLATUM, Bull thistle *+
55. CIRSIUM OLERACEUM
56. CIRSIUM PALUSTRE
57. CIRSIUM TATARICUM
58. CIRSIUM TUBEROSUM (=C. bulbosum)
Clove pink, DIANTHUS CARYOPHYLLUS
Clover, alsike, TRIFOLIUM HYBRIDUM
Clover, crimson, TRIFOLIUM INCARNATUM
Clover, mammoth, TRIFOLIUM MEDIUM
Clover, red, TRIFOLIUM PRATENSE
Clover, white, TRIFOLIUM REPENS
59. COLEUS SP.
60. CONVOLVULUS ARVENSIS, Field bindweed
Cornflower, CENTAUREA CYANUS
Cornsalad, VALERIANELLA DENTATA
Cranesbill, GERANIUM MOLLE
61. CREPIS BIENNIS, Hawksbeard
62. CREPIS BULBOSA, Hawksbeard
63. CREPIS CAPILLARIS (= C. virens), Hawksbeard *+
64. CREPIS FOETIDA, Hawksbeard
65. CREPIS FOETIDA HISPIDA, Hawksbeard
66. CREPIS FOETIDA RHOEADIFOLIA (= C. rhoeadifolia), Hawksbeard
(Crepis rhoeadifolia) = C. FOETIDA RHOEADIFOLIA, Hawksbeard
67. CREPIS VESICARIA TARAXACIFOLIA (=Barkhausia taraxacifolia), Hawksbeard
(Crepis virens) = C. CAPILLARIS, Hawksbeard
Cress, garden, LEPIDIUM SATIVUM
Cress, mouse-ear, ARABIDOPSIS THALIANA
Cuckooflower, CARDAMINE PRATENSIS
68. CYCLAMEN SP.
69. CYNARA CARDUNCULUS, Cardoon
70. DACTYLIS GLOMERATA, Orchard grass
Daffodil, common, NARCISSUS PSEUDONARCISSUS
Daffodil, fall, STERNBERGIA LUTEA
Daffodil, halfskirt, NARCISSUS INCOMPARABILIS
Daisy, English, BELLIS PERENNIS

Dandelion, LEONTODON TARAXACUM
71. DAUCUS CAROTA, Common carrot
72. DELPHINIUM AJACIS, Rocket larkspur
73. DELPHINIUM TROLLIIFOLIUM *+
74. DIANTHUS BARBATUS, Sweet-william *+
75. DIANTHUS CARYOPHYLLUS, Carnation or Clove pink
76. DIANTHUS PLUMARIUS, Grass pink
77. DIDYMODON ALPIGENA (=D. alpigenum), a moss
(Didymodon alpigenum) = D. ALPIGENA, a moss
78. DIPSACUS FULLONUM, Fullers teasel *+
79. DIPSACUS SILVESTRIS, Wild teasel
(Disa grandiflora) = D. UNIFLORA, an orchid
80. DISA UNIFLORA (=D. grandiflora), an orchid
81. DUCHESNEA INDICA (=Fragaria indica), Mock-strawberry
82. EUCHARIS SP., Amazonlily
(Fagopyrum esculentum) = F. VULGARE, Common buckwheat
83. FAGOPYRUM VULGARE (=F. esculentum), Common buckwheat
Fall daffodil, STERNBERGIA LUTEA
False flax, CAMELINA SATIVA
Flax, LINUM USITATISSIMUM
Flax, false, CAMELINA SATIVA
Forget-me-not, MYOSOTIS STRICTA
Foxtail grass, floating, ALOPECURUS GENICULATUS
84. FRAGARIA CHILOENSIS, Chiloe strawberry *+
85. FRAGARIA ELATIOR
(Fragaria indica) = DUCHESNEA INDICA, Mock-strawberry
86. FRAGARIA SP. (CULTIVATED HYBRIDS), Strawberry hybrids *+
87. FRAGARIA VESCA, Alpine strawberry
88. GALANTHUS NIVALIS, Common snowdrop +
89. GALTONIA CANDICANS, Summer-hyacinth
Garlic, common, ALLIUM SATIVUM
Garlic, field or wild, ALLIUM VINEALE
90. GERANIUM MOLLE, Cranesbill
91. GLADIOLUS (LARGE FLOWERED HYBRIDS)
92. GLADIOLUS PRIMULINUS (VARIETIES)
Goldenrod, Canada, SOLIDAGO CANADENSIS
Grape-hyacinth, MUSCARI SP.
Grass, floating foxtail, ALOPECURUS GENICULATUS
Grass, orchard, DACTYLIS GLOMERATA
Grass pink, DIANTHUS PLUMARIUS
Grass, quack-, quick-, or quitch-, AGROPYRON REPENS
Grass, rescue, BROMUS UNIOLOIDES
Grass, sweet vernal, ANTHOXANTHUM ODORATUM
Grass, velvet, NOTHOLCUS LANATUS
Groundsel, common, SENECIO VULGARIS
Hawksbeard, CREPIS SPECIES

93. HELIANTHEMUM GUTTATUM, Rockrose or Sunrose
Hemp, common, CANNABIS SATIVA (?)
94. HIERACIUM PILOSELLA, Mouse-ear
(Holcus lanatus) = NOTHOLCUS LANATUS, Velvet grass
Hop, Common, HUMULUS LUPULUS
95. HORDEUM VULGARE, Barley
96. HUMULUS LUPULUS, Common hop
Hyacinth, common, HYACINTHUS ORIENTALIS
Hyacinth, grape-, MUSCARI SP.
Hyacinth, summer-, GALTONIA CANDICANS
97. HYACINTHUS ORIENTALIS (=H. praecox), Common hyacinth *+
(Hyacinthus praecox) = H. ORIENTALIS, Common hyacinth
98. HYACINTHUS ROMANUS
99. HYACINTHUS SP.
Hydrangea, house, HYDRANGEA OPULOIDES
100. HYDRANGEA OPULOIDES, House hydrangea *+
101. HYMENOCALLIS CALATHINA (=Ismene calathina), Lilybasket
(Hypnum caespitosum) = SCLEROPODIUM CAESPITOSUM, a moss
102. HYPNUM CUPRESSIFORME, a moss
103. HYPNUM ILLECEBRUM, a moss
104. HYPOCHAERIS RADICATA, Cats-car *+
105. IPOMOEA BATATAS, Sweetpotato *+
Iris, English, IRIS XIPHIOIDES
Iris, Spanish, IRIS XIPHIUM
106. IRIS XIPHIOIDES, English iris *+
107. IRIS XIPHIUM, Spanish iris *+
108. ISATIS TINCTORIA
(Ismene calathina) = HYMENOCALLIS CALATHINA, Lilybasket
Kale, BRASSICA OLERACEA ACEPHALA
109. KNIPHOFIA (ERECTA ?), Torchlily
Kohlrabi, BRASSICA OLERACEA GONGYLODES
Ladysthumb, POLYGONUM PERSICARIA
Lambsquarters, CHENOPODIUM ALBUM
Larkspur, rocket, DELPHINIUM AJACIS
Leek, common, ALLIUM PORRUM
110. LEONTODON TARAXACUM (=Taraxacum officinale), Dandelion *+
111. LEPIDIUM SATIVUM, Garden cress
Lilac, common, SYRINGA VULGARIS
112. LILIUM LONGIFLORUM, Easter lily
113. LILIUM REGALE, Royal lily
Lilybasket, HYMENOCALLIS CALATHINA
Lily, Easter, LILIUM LONGIFLORUM
Lily, royal, LILIUM REGALE
114. LINUM USITATISSIMUM, Flax
(Lolium italicum) = L. MULTIFLORUM, Italian ryegrass
115. LOLIUM MULTIFLORUM (=L. italicum), Italian ryegrass
116. LOLIUM PERENNE, Perennial ryegrass

Loosestrife, LYSIMACHIA SP.
Lucerne, MEDICAGO SATIVA
Lupine, European yellow, LUPINUS LUTEUS
117. LUPINUS LUTEUS, European yellow lupine
118. LYSIMACHIA SP., Loosestrife
119. MANIHOT ESCULENTA (=M. utilissima), Cassava
(Manihot utilissima) = M. ESCULENTA, Cassava
120. MEDICAGO LUPULINA, Black medick or Nonesuch
121. MEDICAGO SATIVA, Alfalfa or Lucerne *+
Medick, black, MEDICAGO LUPULINA
Mock-strawberry, DUCHESNEA INDICA
Mosses, DIDYMODON, HYPNUM, POGONATUM, RHACOMITRIUM, SCLEROPODIUM
Mouse-ear, HIERACIUM PILOSELLA
122. MUSCARI SP., Grape-hyacinth +
Mustard, black, BRASSICA NIGRA
Mustard, white, BRASSICA ALBA
123. MYOSOTIS STRICTA, Forget-me-not
Narcissus, early poets, NARCISSUS POETICUS ORNATUS
124. NARCISSUS INCOMPARABILIS, Halfskirt daffodil *+
125. NARCISSUS POETICUS, Poets narcissus *+
126. NARCISSUS POETICUS ORNATUS, Early poets narcissus *+
Narcissus, poets, NARCISSUS POETICUS
Narcissus, polyanthus, NARCISSUS TAZETTA
127. NARCISSUS PSEUDONARCISSUS, Common daffodil *+
128. NARCISSUS TAZETTA, Polyanthus narcissus *+
129. NICOTIANA TABACUM, Common tobacco
Nonesuch, MEDICAGO LUPULINA
130. NOTHOLCUS LANATUS (=Holcus lanatus), Velvet grass
Oats, AVENA SATIVA
Oats, animated, AVENA STERILIS
131. ODONTITES SEROTINA
(Oenothera fraseri) = O. GLAUCA FRASERI, Fraser sundrop
(Oenothera fraseri Youngii) = O. FRUTICOSA YOUNGII, Youngs sundrop
132. OENOTHERA FRUTICOSA YOUNGII (= O. fraseri Youngii), Youngs sundrop
133. OENOTHERA GLAUCA FRASERI (= O. fraseri), Fraser sundrop
Onion, ALLIUM CEPA
Orchard grass, DACTYLIS GLOMERATA
Orchid, DISA UNIFLORA
134. OXALIS SP. *+
135. PAEONIA OFFICINALIS, Common peony *+
Pea, common, PISUM SATIVUM
Pea, field, PISUM ARVENSE
Pennycress, field, THLASPI ARVENSE
136. PENTSTEMON BARBATUS (= Chelone barbata)
Peony, common, PAEONIA OFFICINALIS
137. PHASEOLUS VULGARIS, Common bean
Phlox, blue, PHLOX DIVARICATA

138. PHLOX DECUSSATA *+
139. PHLOX DIVARICATA, Blue phlox
Phlox, Drummond, PHLOX DRUMMONDII
140. PHLOX DRUMMONDII, Drummond phlox
141. PHLOX DRUMMONDII COMPACTA
Phlox, garden, PHLOX PANICULATA
142. PHLOX GLABERRIMA SUFFRUTICOSA (2 VAR.) (=P. suffruticosa)
143. PHLOX PANICULATA, Garden phlox *+
(Phlox suffruticosa) = P. GLABERRIMA SUFFRUTICOSA (2 VAR.)
Pigweed, CHENOPODIUM ALBUM
Pimpernel, scarlet, ANAGALLIS ARVENSIS
Pink, clove, DIANTHUS CARYOPHYLLUS
Pink, grass, DIANTHUS PLUMARIUS
144. PISUM ARVENSE, Field pea
145. PISUM SATIVUM, Common pea
146. PLANTAGO LANCEOLATA, Buckhorn plantain *+
147. PLANTAGO MAJOR, Rippleseed plantain
148. PLANTAGO MARITIMA *+
Plantain, buckhorn, PLANTAGO LANCEOLATA
Plantain, rippleseed, PLANTAGO MAJOR
149. POA ANNUA, Bluegrass
150. POGONATUM ALOIDES, a moss
151. POGONATUM NANUM, a moss
152. POLYGONUM CONVOLVULUS, Black bindweed
153. POLYGONUM LAPATHIFOLIUM
154. POLYGONUM PERSICARIA, Ladysthumb
Potato, SOLANUM TUBEROSUM
155. POTENTILLA ANSERINA, Silverweed
Primrose, Chinese, PRIMULA PRAENITENS
Primrose, Japanese, PRIMULA JAPONICA
Primrose, top, PRIMULA OBCONICA
156. PRIMULA JAPONICA, Japanese primrose
157. PRIMULA OBCONICA, Top primrose *+
158. PRIMULA PRAENITENS (=P. sinensis), Chinese primrose *+
(Primula sinensis) = P. PRAENITENS, Chinese primrose
Quackgrass, Quickgrass, or Quitchgrass, AGROPYRON REPENS
Radish, wild, RAPHANUS RAPHANISTRUM
159. RANUNCULUS ACRIS, Tall buttercup
160. RANUNCULUS AURICOMUS
161. RANUNCULUS REPENS, Creeping buttercup
Rape, BRASSICA NAPUS
162. RAPHANUS RAPHANISTRUM, Wild radish
Rescue grass, BROMUS UNIOLOIDES
(Rhacomitrium cataractarum) = R. PROTENSUM, a moss
163. RHACOMITRIUM PROTENSUM (=R. cataractarum) a moss
Rockcress, alpine, ARABIS ALPINA
Rockrose, HELIANTHEMUM GUTTATUM

164. RUMEX ACETOSA, Garden sorrel
Rye, SECALE CEREALE
Ryegrass, Italian, LOLIUM MULTIFLORUM
Ryegrass, perennial, LOLIUM PERENNE
165. SACCHARUM OFFICINARUM, Sugarcane
166. SCHIZANTHUS RETUSUS, Orange-rose butterflyflower
167. SCHIZANTHUS WISETONENSIS, Wiseton butterflyflower
168. SCILLA BIFOLIA (=S. cernua), Squill
(Scilla campanulata) = S. HISPANICA, Squill
(Scilla cernua) = S. BIFOLIA, Squill
169. SCILLA HISPANICA (=S. campanulata), Squill
170. SCILLA SIBIRICA, Siberian squill +
171. SCLEROPODIUM CAESPITOSUM, a moss
172. SCLEROPODIUM ILLECEBRUM, a moss
173. SECALE CEREALE, Rye
Sedge, CAREX SP.
174. SENECIO VULGARIS, Common groundsel
(Setaria sp.) = CHAETOCHLOA SP.
Shallot, ALLIUM ASCALONICUM
Shepherds-purse, BURSA BURSA-PASTORIS
Silverweed, POTENTILLA ANSERINA
(Sinapis alba) = BRASSICA ALBA, White mustard
(Sinapis arvensis) = BRASSICA ARVENSIS, Charlock
Snowdrop, common, GALANTHUS NIVALIS
175. SOLANUM TUBEROSUM, Potato +
176. SOLIDAGO CANADENSIS, Canada goldenrod
177. SONCHUS ASPER, Spiny-leaved sow-thistle
178. SONCHUS OLERACEUS, Common sow-thistle
Sorrel, garden, RUMEX ACETOSA
Sow-thistle, common, SONCHUS OLERACEUS
Sow-thistle, spiny-leaved, SONCHUS ASPER
Speedwell, thyme-leaved, VERONICA SERPYLLIFOLIA
179. SPERGULA ARVENSIS, Corn spurry
180. SPERGULA SATIVA, Field spurry
Spinach, common, SPINACIA OLERACEA
181. SPINACIA OLERACEA, Common spinach
182. SPREKELIA FORMOSISSIMA (=Amaryllis formosissima), St. Jameslily
Spurry, corn, SPERGULA ARVENSIS
Spurry, field, SPERGULA SATIVA
Squill, SCILLA SPECIES
Squill, Siberian, SCILLA SIBIRICA
(Stellaria media) = ALSINE MEDIA, Common chickweed
(Stenophragma thalianum) = ARABIDOPSIS THALIANA, Mouse-ear cress
183. STERNBERGIA LUTEA, Fall-daffodil +
St. Jameslily, SPREKELIA FORMOSISSIMA

Strawberry, alpine, FRAGARIA VESCA
Strawberry, Chiloe, FRAGARIA CHILOENSIS
Strawberry hybrids, FRAGARIA SP. (CULTIVATED HYBRIDS)
Strawberry, mock-, DUCHESNEA INDICA
Sugarcane, SACCHARUM OFFICINARUM
Summer-hyacinth, GALTONIA CANDICANS
Sundrop, fraser, OENOTHERA GLAUCA FRASERI
Sundrop, Youngs, OENOTHERA FRUTICOSA YOUNGII
Sunrose, HELIANTHEMUM GUTTATUM
Sweetpotato, IPOMOEA BATATAS
Sweet vernal grass, ANTHOXANTHUM ODORATUM
Sweet-william, DIANTHUS BARBATUS
184. SYRINGA VULGARIS, Common lilac +
(Taraxacum officinale) = LEONTODON TARAXACUM, Dandelion
Teasel, fullers, DIPSACUS FULLONUM
Teasel, wild, DIPSACUS SILVESTRIS
Thistle, CARLINA VULGARIS
Thistle, bull, CIRSIUM LANCEOLATUM
Thistle, Canada, CIRSIUM ARVENSE
Thistle, plumeless, CARDUUS ACANTHOIDES
185. THLASPI ARVENSE, Field pennycress
(Thlaspi bursa-pastoris) = BURSA BURSA-PASTORIS, Shepherds-purse
Tobacco, common, NICOTIANA TABACUM
Torchlily, KNIPHOFIA (ERECTA ?)
186. TRIFOLIUM HYBRIDUM, Alsike clover
187. TRIFOLIUM INCARNATUM, Crimson clover *+
188. TRIFOLIUM MEDIUM, Mammoth clover
189. TRIFOLIUM PRATENSE, Red clover *+
190. TRIFOLIUM REPENS, White clover *+
191. TRITICUM AESTIVUM (=T. sativum; = T. vulgare), Wheat
(Triticum repens) = AGROPYRON REPENS, Quackgrass, Quickgrass, or Quitchgrass
(Triticum sativum) = T. AESTIVUM, Wheat
(Triticum vulgare) = T. AESTIVUM, Wheat
Turnip, BRASSICA RAPA
Turtlehead, white, CHELONE GLABRA
192. VALERIANELLA DENTATA, Cornsalad
Velvet grass, NOTHOLCUS LANATUS
193. VERONICA SERPYLLIFOLIA, Thyme-leaved speedwell
Vetch, common, VICIA SATIVA
194. VICIA FABA, Broadbean
195. VICIA SATIVA, Common vetch
Wallflower, common, CHEIRANTHUS CHEIRI
Wheat, TRITICUM AESTIVUM

# FRUIT DISEASES

## FURTHER REPORTS ON APPLE SCAB (CENTURIA INAEQUALIS)

New York: An average of seven samples from Dutchess, Columbia, Green, Ulster and Orange counties show 12 per cent of the perithecia with no spores cut out; 33 per cent with 10 per cent and less of the spores mature; 35 per cent with between 10 and 50 per cent of the spores mature. There was some spore discharge with the rain of May 1. The next rain will give considerable infection if of sufficient duration. The major discharge will probably come with the following rain. (J. M. Hamilton, May 6. Weekly News Letter, May 9.)

West Virginia: Weather conditions for development of scab this year have been more favorable than for some time. Some winter spores had matured and were discharged during the rains of April 9 to 11. Considerable infection was noted on leaves of unsprayed crabs at Inwood as early as April 30, although but a trace was found on apple. A heavy spore discharge occurred April 30, however, infection from which began to be noticeable on apple leaves by May 13. Although trees which received the "pink" spray should have been protected against this discharge, heavy spore discharges occurred also during the rains of May 8 to 12 while trees were practically unprotected. (E. C. Sherwood, from West Virginia Orchard Spray Service Notice No. 4, 1932.) The Three-weeks spray for apples.

Kentucky: Observations on ascospore development at Lexington and Henderson indicate that development is very slow. Blossoming is complete and calyx spray completed at Henderson several days ago but leaves collected on May 9 had only immature spores.

Martha crab in the Experiment Station's orchard is now severely injured by scab. Nearly every leaf is heavily infected, the petioles of the first leaves are affected, fruit pedicels are nearly covered with lesions, and part of them have fallen. This extremely heavy infection appeared to be in the absence of any ascospores but seemed to have been derived from bud scale infections although such infections have not been observed. (W. D. Valleau, May 13).

Illinois: Scab was first observed on the leaves at Urbana on April 30, and would probably have been visible on April 28. In southern Illinois, in Pulaski County, I observed it on May 3. The spots there had been visible at least a week. At Neoga (central Illinois) lesions at least a week old were observed on May 5. By May 10 at Neoga the scab infection on the leaves of check trees was very abundant. Weather conditions during the past week

have been unusually favorable for scab development. We have had a number of light rains and continuous cloudy weather, with relatively low temperatures. The calyx spray has just been applied in most central Illinois orchards. (H. W. Anderson, May 12).

Wisconsin: First discharge of scab spores noted on Virginia crab leaves at Madison, April 22. Abundant discharge of spores from several varieties, May 7. (R. E. Vaughan).

## FRUIT DISEASES IN ILLINOIS

Besides apple scab H. W. Anderson reports the following fruit diseases in Illinois (May 12):

Blight - (Bacillus amylovorus): On an extensive trip through southern Illinois, May 3 to 5, no twig blight on either apples or pears was observed. Blossom blight on apples was observed in an orchard in Pulaski County (southern Illinois), and was evidently at least a week old.

Frog eye leaf spot: An unusual amount of what appears to be frog eye leaf spot, due to Physalospora cydoniae, was observed in a number of apple orchards of southern Illinois. This disease is not ordinarily a serious factor in Illinois orchards and its early and abundant appearance this year is unusual.

Winter injury: As a result of late freezes, March 5 to 8, and March 12, a peculiar type of winter injury has developed. In the pear not only were the blossoms killed, but the wood of the spur was killed back in most cases to the main shoot. In peach orchards the blossoms and surrounding leaves were killed and the dead tissues extended into the fruiting shoot. In some cases the tissues were killed about a half-inch above and below the bud. In other cases the tissues immediately surrounding the bud were killed and cork formation has occurred so that the buds are easily knocked off. Apparently, unless the injury is too serious, the twigs are recovering, forming peculiar cankers which resemble tree hopper injury.

Peach leaf curl - (Exoascus deformans): This disease was observed near Carbondale (southern Illinois) on April 21. It is moderately prevalent in most unsprayed, neglected orchards. In the commercial orchards it is either absent or of little importance.

Bacterial spot of peach - (Bacterium pruni): The primary infection on the leaves was observed in Pulaski and Jackson Counties (southern Illinois) on May 3. The infection was localized and was ordinarily found below winter injured terminals.

## PEAR BLIGHT NOT IMPORTANT IN CALIFORNIA THIS YEAR

According to C. F. Kinman, in a letter to M. B. Waite (May 7), only scattering infections of pear blight (Bacillus amylovorus) have shown up in California this year. Concerning this statement, Dr. Waite remarks,

> "When the outbreak of pear blight occurred in California in 1930, the prediction was made, based on past experiences, that this epidemic would subside in a couple of years. It dropped down markedly last year, and still more completely this year."

# DISEASES OF VEGETABLE CROPS

## BEAN DISEASES IN LOUISIANA

On a survey of some of the commercial bean-growing centers in Louisiana April 19 to 26, Halo Blight (Bacterium medicaginis phaseolicola) was found in some fields in Jefferson, Terrebonne, Tangipahoa and Livingston Parishes but was not sufficiently widespread in any of those observed, with one possible exception, to cause a noteworthy reduction in the crop unless weather conditions favoring spread should intervene before harvest time.

Sclerotium rolfsii was found scattered through nearly all fields. No anthracnose was observed.

The freeze of March 9 killed all beans above ground at the time, necessitating widespread replanting. This and the subsequent cool, dry weather in March has delayed the crop 2 to 3 weeks. (Florence Hedges, May 12).

# DISEASES OF CEREALS AND FORAGE CROPS

## ALFALFA AND CLOVER DISEASES IN KENTUCKY

Alfalfa stands which were excellent late in the winter have in some cases been nearly completely destroyed. They were injured by cold about March 6, and black stem (caused by a pycnidium-forming organism with the majority of spores non-septate and hyaline) developed in a very severe form soon after, killing many of the new shoots and weakening most of the others. In some plantings practically all new growth was destroyed, the

plants seeming to have been killed. Some of them will send up new crown buds. There is a marked difference in the susceptibility of alfalfa to this type of injury. On the station's grounds one variety of unknown origin was making good growth 2 weeks ago while the varieties on each side were nearly completely killed out. The injury was aggravated by aphids and by crown rot (Sclerotinia) which is severe this year.

Counts made in red clover strains, from various parts of the United States and Europe, of the number of plants killed or injured by crown rot (Sclerotinia trifoliorum) showed striking differences in resistance. Kentucky 101, a well adapted local strain, was used as a check on the others, being planted at frequent intervals through the field. From 8 to 15 per cent of it was killed. Strains from the dry sections of the Northwest often had as much as 60 per cent loss. European clovers were usually severely injured. Adapted clovers from neighboring States usually showed slightly more injury than the local clover, while clovers from Michigan to Minnesota showed much higher mortality than the local adapted clover. It is quite evident that natural selection has resulted in a moderately resistant type of red clover for Kentucky conditions.

Northern anthracnose (Gloeosporium caulivorum) has been present for over two weeks on red clover in its third year. Last year's seedings appear to be free from it or so little injured as to be unnoticeable. (W. D. Valleau, May 13).

## STEM ROT OF RED CLOVER IN OHIO

A. L. Pierstorff reports that there has been an unusual number of complaints of damage due to stem rot (Sclerotinia trifoliorum) of red clover this year. Reports, specimens and requests for information have been received from various parts of the State. (R. J. Haskell, May 25.)

## BARLEY DISEASES IN WISCONSIN

Stripe (Helminthosporium gramineum). There is more than usual early striping and browning in the third or fourth leaf stage. In some experimental plantings on the Station farm as high as 15 per cent of the plants have been infected. Velvet variety seems to be most susceptible followed by Odebrucker. Even the resistant strains are showing traces of the stripe disease.

Yellow leaf caused by frost is showing up in barley fields in southern Wisconsin. Little permanent damage is expected. (R. E. Vaughan, May 23).

## LEAF RUSTS OF CEREALS IN KENTUCKY

Leaf rusts of the small grains have been abundant all spring, much more advanced than is usual at this season. (W. D. Valleau, May 13).

# DISEASES OF SPECIAL CROPS

## TOBACCO WILDFIRE IN MARYLAND

On May 18, E. E. Clayton of the Division of Tobacco and Plant Nutrition observed three beds affected by wildfire (Bacterium tabacum) between Washington and Marlboro, Maryland. In one bed the disease was very severe, actually destroying the plants. In the other two the attack was slight. This is the first report for Maryland this year.

## ANGULAR LEAF SPOT OF TOBACCO IN KENTUCKY

A severe outbreak of angular leaf spot (Bacterium angulatum) recently occurred in the Central Bluegrass section of Kentucky, the details of which appear to be worth recording. For about 2 weeks preceding May 11, we had examined tobacco beds in Fayette County without finding any angular leaf spot. On Wednesday May 11, a bed 200 feet long on the Station's grounds was examined with no signs whatever of leaf spot being found. This seemed to be the condition in the beds in general about the County as reported by men who had been weeding their beds. On Friday 2 beds were found in which the disease was just beginning to appear. On Sunday morning reports began to come in of severe damage to plants. On Monday May 16, the Station's bed, which had showed no sign of disease the preceding Wednesday, presented a yellowish-brown appearance nearly throughout, most of the plants being affected in dozens of places. The same situation was found in several beds examined and has been reported by growers as occurring in beds not examined personally.

There appears to be no question that the widespread infection occurred on Thursday and Friday, May 12 and 13. The temperature was falling Wednesday, was low on Thursday and slightly warmer on Friday. The atmosphere was humid. The plants were damp from Wednesday until Saturday due to condensation on the leaves. The sudden outbreak, with no recognizable symptoms on the plants immediately before the outbreak occurred, indicates that inoculum was abundant enough throughout the beds over a wide territory so that with proper weather conditions the majority of plants became infected in a period of a few hours. A Bordeaux drench 2-3-50 put on when the first true leaf was just developing, and a drench at this time and another when the leaves were 2 to 3 inches long - applied May 11 - both gave nearly perfect control in the station's bed in which infection was so heavy. This bed had a area of 200 feet x 12 feet unsprayed which was heavily infected, an area 100 x 12 drenched twice with nearly perfect control, and an area 50x12 drenched once while the plants were small with nearly perfect control. The seed used in this bed was raised in the greenhouse. (W. D. Valleau, May 20).

## COLD INJURY TO TOBACCO SEED BEDS IN KENTUCKY

Cold injury is present in every tobacco bed so far examined this spring. It causes the small leaves to become quite yellow, as they develop, due to injury to the chloroplasts. Many of these leaves are constricted through the middle. Cold windy weather and thin tobacco cotton have brought about the trouble. (W. D. Valleau, May 20).